

# The Cost of Prairie Strips

## What are prairie strips?

Prairie strips are a tool for improving the health and function of row crop farm fields. Researchers at Science-based Trials of Row crops Integrated with Prairie Strips (STRIPS) team have found that strategically planting native prairie in row crop fields provides benefits to the land, water, and wildlife well beyond the area of land converted.

## How much does prairie planting cost?

Table 1 represents typical costs for a prairie strip planting after soybean. The range of costs is calculated based on average land rent across cropland quality, as measured by its Corn Suitability Rating (CSR). In general, the water runoff from every nine acres of row crops can be treated with just one acre of perennial prairie. So, for every ten acres of farmland, the average total annual cost (without cost share) of converting one acre of cropland to prairie ranges from \$200 to \$300. In other words, converting a tenth of every acre from annual crop to prairie costs between \$26 to \$33 per year.

**Table 1.** Annualized total costs of prairie strips calculated over a 15-year management period at a 4% discount rate (in 2020 dollars). Assumes burning is the primary long-term management.

	High quality soils (CSR2 83; Rent \$226) <sup>1</sup>	Medium quality soils (CSR2 73; Rent \$199) <sup>1</sup>	Low quality soils (CSR2 62; Rent \$163) <sup>1</sup>
Per acre of prairie	\$293	\$266	\$230
Per acre of prairie with CRP <sup>2</sup>	\$67	\$64	\$62
Per treated crop acre <sup>3</sup>	\$33	\$30	\$26
Per treated crop acre with CRP <sup>2,3</sup>	\$7.44	\$7.11	\$6.88

<sup>1</sup> CSR2 is the Iowa Corn Suitability Rating; every CSR2 point is worth \$2.72 in rent based on 2019 state-level averages for Iowa; Plastina et al. 2019.

<sup>2</sup> Based on payment schedule for CP-43 Prairie Strips. Pays 55% cost share, 90% annual rent, signing bonus equal to 32.5% of rent. Assumes 15-year contract.

<sup>3</sup> Assumes that one acre of prairie “treats” nine acres of row crops.



Some farms may experience higher “opportunity costs” than the average farm (e.g. in terms of foregone rent or revenue), thus annual costs can scale higher in these cases. However, the USDA Farm Service Agency also offers Conservation Reserve Program (CRP) contracts that now cover prairie strips (CP-43). Under a 15-year CRP contract, farmers could receive a total cost reduction of approximately 75 percent, thus costing about \$8 per year per crop acre treated with prairie. Other sources of financial support are also available (see reverse side).

## Why plant prairie strips on farmland?

Prairie strips are of primary importance because they prevent soil erosion and nutrient runoff from farmland. In research conducted in Jasper County, Iowa, converting 10 percent of farmland to prairie can reduce sediment and nutrient transport off the field into waterways by more than 90 percent. Prairie strips also increase plant, pollinator and wildlife diversity and create opportunities for economic diversification on farms.

## What else to consider

Before farmers choose one or several best management practices (BMPs) to implement, three factors should be considered: effectiveness of the BMP in performing its intended field-level task (e.g., reducing run-off, increasing biodiversity, retaining nutrients, improving soil health); compatibility of the practice relative to the current operation in terms of equipment and time/labor availability, etc.; and financial feasibility of the practice relative to alternative management options. Prairie strip plantings require minimal land conversion and maintenance, and are among the cheapest BMPs, especially when combined with a CRP contract.

For their size, prairie strips can result in dramatic, disproportionately large benefits to the landscape. In other words, a little goes a long way toward soil conservation, nutrient retention, wildlife habitat and the long-term economic productivity and sustainability of farmed landscapes.

## How are costs calculated?

Costs fall into two categories: land conversion and maintenance costs, and the opportunity cost of the management decision (Table 2). For prairie strip planting,

there are three kinds of land conversion and maintenance costs: site preparation, prairie strip establishment, and maintenance. The range of costs varies depending on multiple factors. Proper site preparation reduces the time and money spent on subsequent management steps. The prior quality of the land also influences these costs. For example, fewer herbicide applications are needed if there are fewer established weeds in the area.

Landowners must also consider the missed opportunity represented when changing a land management regime from the status quo. The annual opportunity cost is the cost of foregone rent or net revenue loss associated with land converted to perennial prairie. Opportunity costs vary depending on factors relating to ownership, soil quality, management practices, and crop and land value, but they scale up incrementally with the amount of land taken out of crop production. They are often calculated using average land rent as a proxy for foregone revenue.

Site preparation and establishment are less than 10 percent of the total cost of a prairie strip and ongoing property and management costs are about 15 percent. Opportunity costs represent the greatest proportion—upwards of 75 percent—of the total cost of prairie strip planting.

<b>Table 2.</b> Estimated range of costs for a 15-year management plan of 10% prairie strip planting after soybean (in 2020 dollars)		
	<b>Range of costs<sup>1</sup></b>	<b>Mean price per acre</b>
<b>Site preparation</b>		
Year 0:		
Tillage (tandem disking)	\$9 to \$23/acre	\$15.50
Herbicide and application	\$39.75 to \$49/acre	\$44.37
<b>Establishment</b>		
Year 0-2:		
Seed (year 0)	Highly variable*	\$150
Seed drilling (year 0)	\$12 to \$25/acre	\$18.70
Seed cultipacking (year 0)	\$8 to \$20/acre	\$14
<i>Sight preparation and establishment are generally less than 15% of the total cost per year.</i>		
<b>Management</b>		
Annual:		
General operating costs	3% of establishment costs	\$10
AND		
Mowing for establishment 3 times in year 1, annually years 2-15	\$24 to \$75/acre	\$50
Years 2-15:		
Mowing/Raking/Windrowing/Baling (after year 2, every 3 years)	\$24 to \$49/acre	\$36.50
OR		
Years 2-15: Burning	\$35 to \$124/hour	\$62
<i>Management costs are about 7-9% of the total cost per year per treated crop acre.</i>		
<b>Opportunity costs</b>		
Annual:		
Land rent	Highly variable	\$219
<i>Opportunity costs are up to 82% of the total cost per year.</i>		

<sup>1</sup>Plastina et al., 2020

<sup>2</sup>2020 Iowa Pheasants Forever seed price per acre for CP-43 Prairie Strips mix (20/20).

<sup>3</sup>Plastina et al., 2019; data presented reflects state-level averages.

## Where to find financial support

- [USDA Farm Service Agency](http://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index) offers annual cost-share and incentive payments through the Conservation Reserve Program CP-43 Prairie Strips practice: [www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index](http://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index)
- [Environmental Quality Incentives Program](http://www.ia.nrcs.usda.gov/programs) may assist with prairies to be harvested or grazed, depending on the county: [www.ia.nrcs.usda.gov/programs](http://www.ia.nrcs.usda.gov/programs)
- [US Fish and Wildlife Partners Program](http://www.fws.gov/midwest/partners) works with landowners to restore wildlife habitat: [www.fws.gov/midwest/partners](http://www.fws.gov/midwest/partners)
- [Resource Enhancement and Protection](http://www.iowadnr.gov/environment/REAP) awards small grants for soil and water protection: [www.iowadnr.gov/environment/REAP](http://www.iowadnr.gov/environment/REAP)
- [Pheasants Forever](http://www.iowapf.net/NativeGrassProgram.aspx) funds habitat projects including native prairie seedings: [www.iowapf.net/NativeGrassProgram.aspx](http://www.iowapf.net/NativeGrassProgram.aspx)
- [Trees Forever](http://www.treesforever.org) funds pollinator projects: [www.treesforever.org](http://www.treesforever.org)

## Learn more about prairie strips

These resources offer additional information on prairies and prairie strips:

- A full list of [STRIPS project partners](http://www.nrem.iastate.edu/research/STRIPS/content/partners) can be found at [www.nrem.iastate.edu/research/STRIPS/content/partners](http://www.nrem.iastate.edu/research/STRIPS/content/partners)
- [Tallgrass Prairie Center](http://tallgrassprairiecenter.org) website: [tallgrassprairiecenter.org](http://tallgrassprairiecenter.org)
- This and other publications can be found on the [ISU Extension Store](http://store.extension.iastate.edu): [store.extension.iastate.edu](http://store.extension.iastate.edu)
- Fields with prairie strips are located at the [Iowa State University Research and Demonstration farms](http://farms.ag.iastate.edu/farms) across the state: [farms.ag.iastate.edu/farms](http://farms.ag.iastate.edu/farms)
- Prairie strips research fields are located at the [Neal Smith National Wildlife Refuge](http://www.fws.gov/refuge/neal_smith), Prairie City, Iowa: [www.fws.gov/refuge/neal\\_smith](http://www.fws.gov/refuge/neal_smith)

## References

- Plastina, A., A. Johanns, and C. Welter. 2020. 2020 Iowa Farm Custom Rate Survey. Ag Decision Maker, Iowa State University. File A3-10.
- Plastina, A., A. Johanns, and C. Welter. 2019. Cash Rental Rates for Iowa 2019 Survey. Ag Decision Maker, Iowa State University. FM 1851, Revised May 2019.

Adapted from the STRIPS research paper: Tyndall, J. C., L. A. Schulte, M. Liebman, and M. Helmers.

"Field-Level Financial Assessment of Contour Prairie Strips for Enhancement of Environmental Quality." Environmental Management, 2013.

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Prepared by the STRIPS team. Contact Tim Youngquist, Agronomy, and Omar de Kok-Mercado, Natural Resource Ecology and Management, Iowa State University, at [prairiestrips@iastate.edu](mailto:prairiestrips@iastate.edu) for more information.

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